US006453294B1

(12) **United States Patent**
Dutta et al.

(10) **Patent No.: US 6,453,294 B1**
(45) **Date of Patent: Sep. 17, 2002**

(54) **DYNAMIC DESTINATION-DETERMINED MULTIMEDIA AVATARS FOR INTERACTIVE ON-LINE COMMUNICATIONS**

(75) Inventors: **Rabindranath Dutta**, Austin; **Michael A. Paolini**, Round Rock, both of TX (US)

(73) Assignee: **International Business Machines Corporation**, Armonk, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 190 days.

(21) Appl. No.: **09/584,599**

(22) Filed: **May 31, 2000**

(51) **Int. Cl.**[7] **G10L 21/06**; G10L 13/08; G10L 15/26

(52) **U.S. Cl.** **704/270.1**; 704/270; 704/275; 704/260; 704/235

(58) **Field of Search** 345/419–473; 704/259, 260, 270, 270.1, 275, 235

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,736,982	A	4/1998	Suzuki et al.	345/330
5,802,296	A	9/1998	Morse et al.	395/200.38
5,812,126	A	9/1998	Richardson et al.	345/330
5,841,966	A	11/1998	Irribarren	395/200
5,880,731	A	3/1999	Liles et al.	345/349
5,884,029	A	3/1999	Brush, II et al.	395/200.32
5,894,305	A	4/1999	Needham	345/329
5,894,307	A	4/1999	Ohno et al.	345/355
5,930,752	A	7/1999	Kawaguchi et al.	704/235
5,950,162	A *	9/1999	Corrigan et al.	704/260
5,956,038	A *	9/1999	Rekimoto	345/419
5,956,681	A *	9/1999	Yamakita	704/270.1
5,963,217	A *	10/1999	Grayson et al.	345/473
5,977,968	A	11/1999	Le Blanc	345/339
5,983,003	A	11/1999	Lection et al.	395/200.32

OTHER PUBLICATIONS

Seltzer ("Putting a Face on your Web Presence, Serving Customers On–Line", Business on the World Wide Web, Apr. 1997).*

Research Disclosure, *A Process for Customized Information Delivery*, Apr. 1998, p. 461.

Reserach Disclosure, *Method and System for Managing Network Deices via the WEB*, Oct. 1998, pp. 1367–1369.

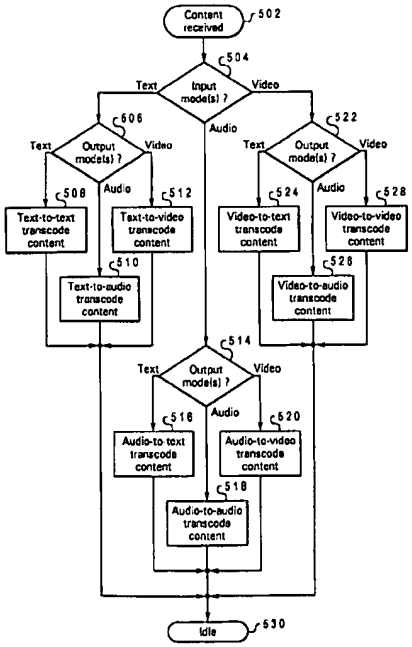
* cited by examiner

Primary Examiner—Richemond Dorvil
Assistant Examiner—Daniel A Nolan
(74) *Attorney, Agent, or Firm*—Marilyn Smith Dawkins; Bracewell & Patterson, L.L.P.

(57) **ABSTRACT**

Transforms are used for transcoding input text, audio and/or video input to provide a choice of text, audio and/or video output. Transcoding may be performed at a system operated by the communications originator, an intermediate transfer point in the communications path, and/or at one or more system(s) operated by the recipient(s). Transcoding of the communications input, particular voice and image portions, may be employed to alter identifying characteristics to create an avatar for a user originating the communications input.

21 Claims, 5 Drawing Sheets



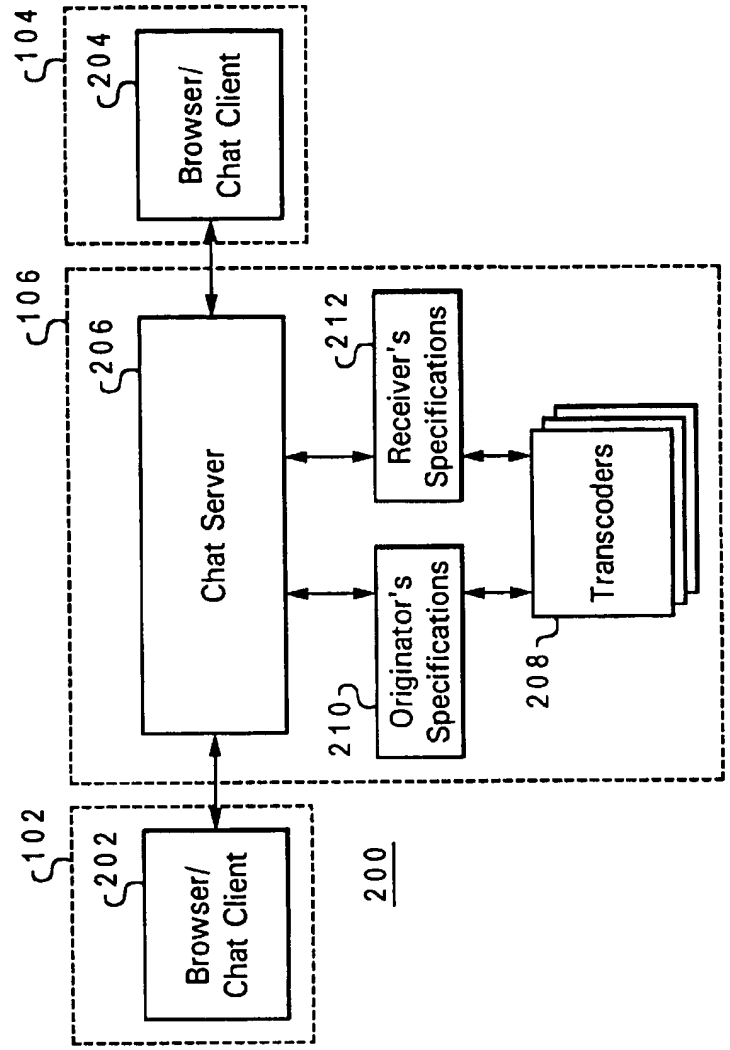

104
204
Browser/
Chat Client
106
206
Chat Server
212
Receiver's
Specifications
210
Originator's
Specifications
208
Transcoders
102
202
Browser/
Chat Client
200

Fig. 2A

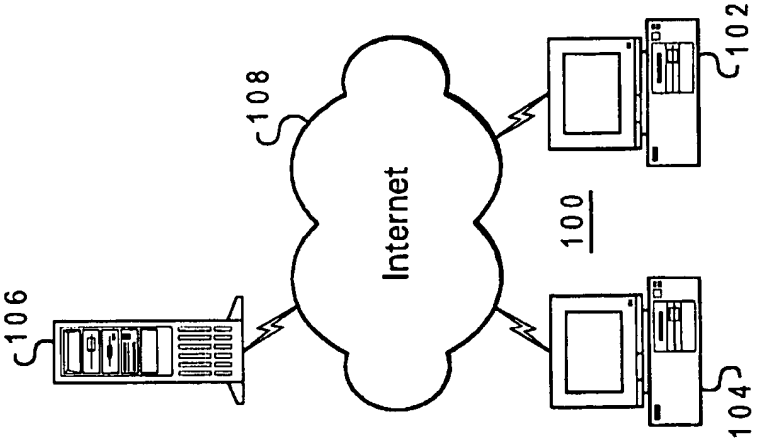

108
Internet
102
106
100
104

Fig. 1

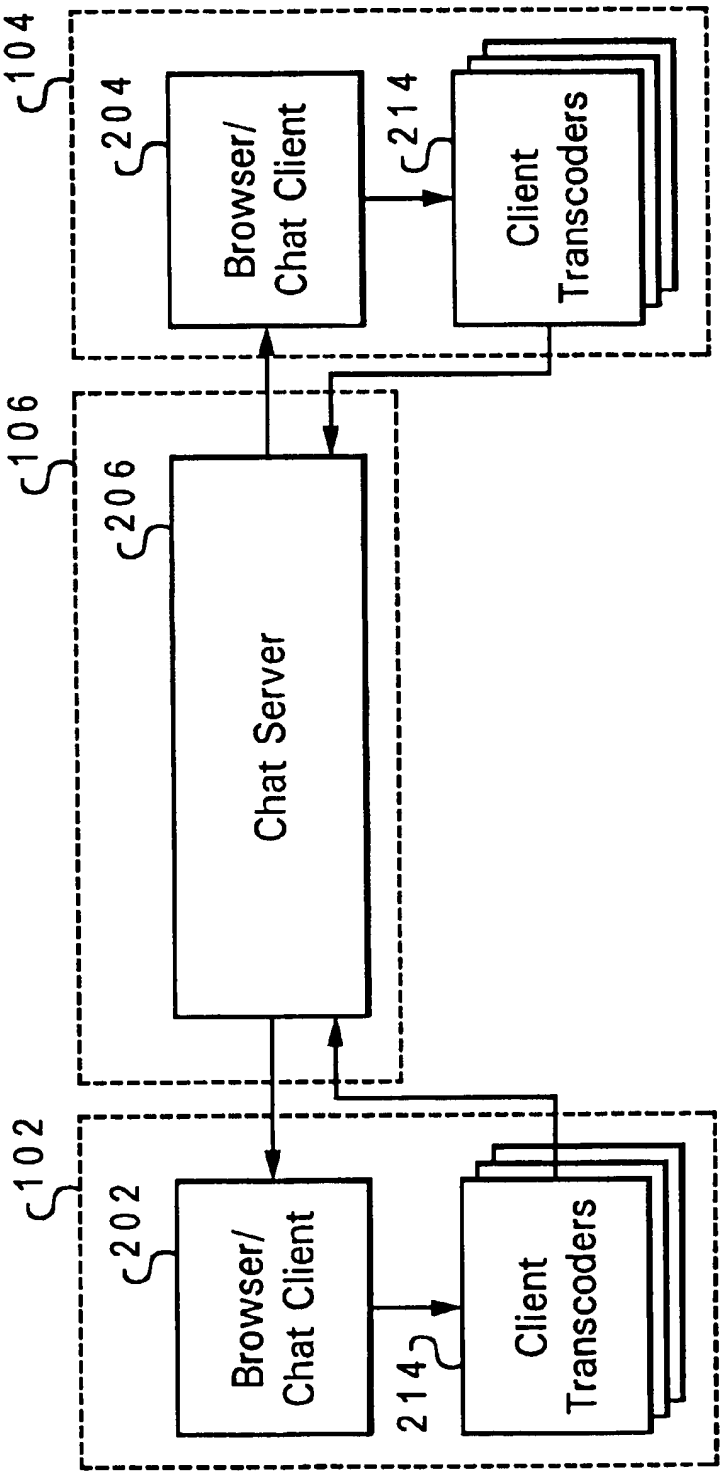

104
204
Browser/
Chat Client
214
Client
Transcoders
106
206
Chat Server
102
202
Browser/
Chat Client
214
Client
Transcoders

Fig. 2B

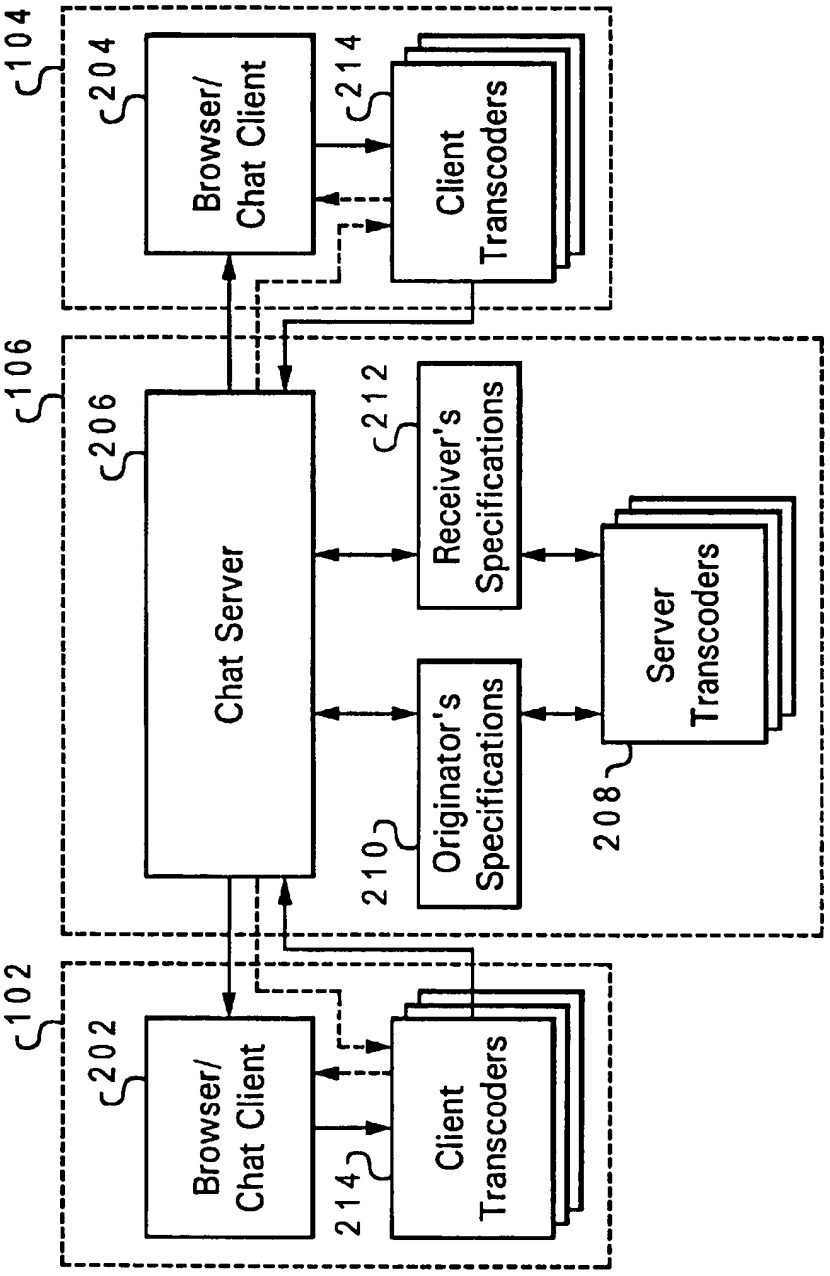

104
204
Browser/
Chat Client
214
Client
Transcoders
106
206
Chat Server
212
Receiver's
Specifications
Server
Transcoders
208
210
Originator's
Specifications
102
202
Browser/
Chat Client
214
Client
Transcoders

Fig. 2C

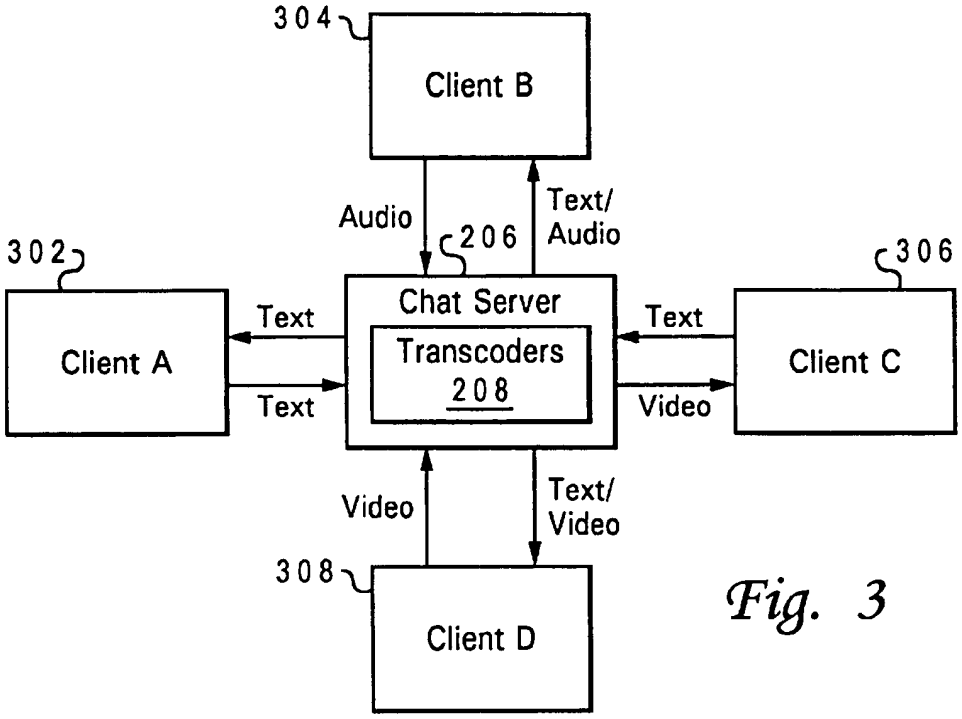

304
Client B
Audio
206
Text/
Audio
302
306
Chat Server
Text
Text
Transcoders
208
Text
Client A
Client C
Text
Video
Video
Text/
Video
308
Client D

Fig. 3

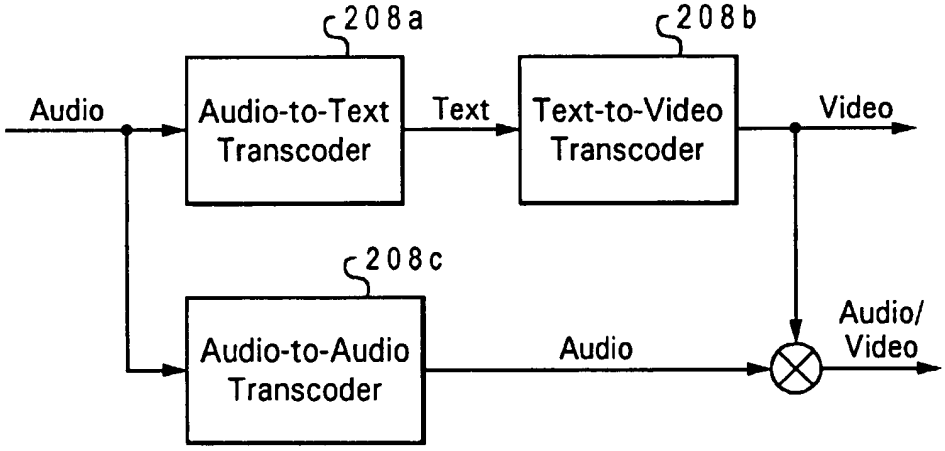

208a
208b
Audio
Audio-to-Text
Transcoder
Text
Text-to-Video
Transcoder
Video
208c
Audio-to-Audio
Transcoder
Audio
Audio/
Video

Fig. 4

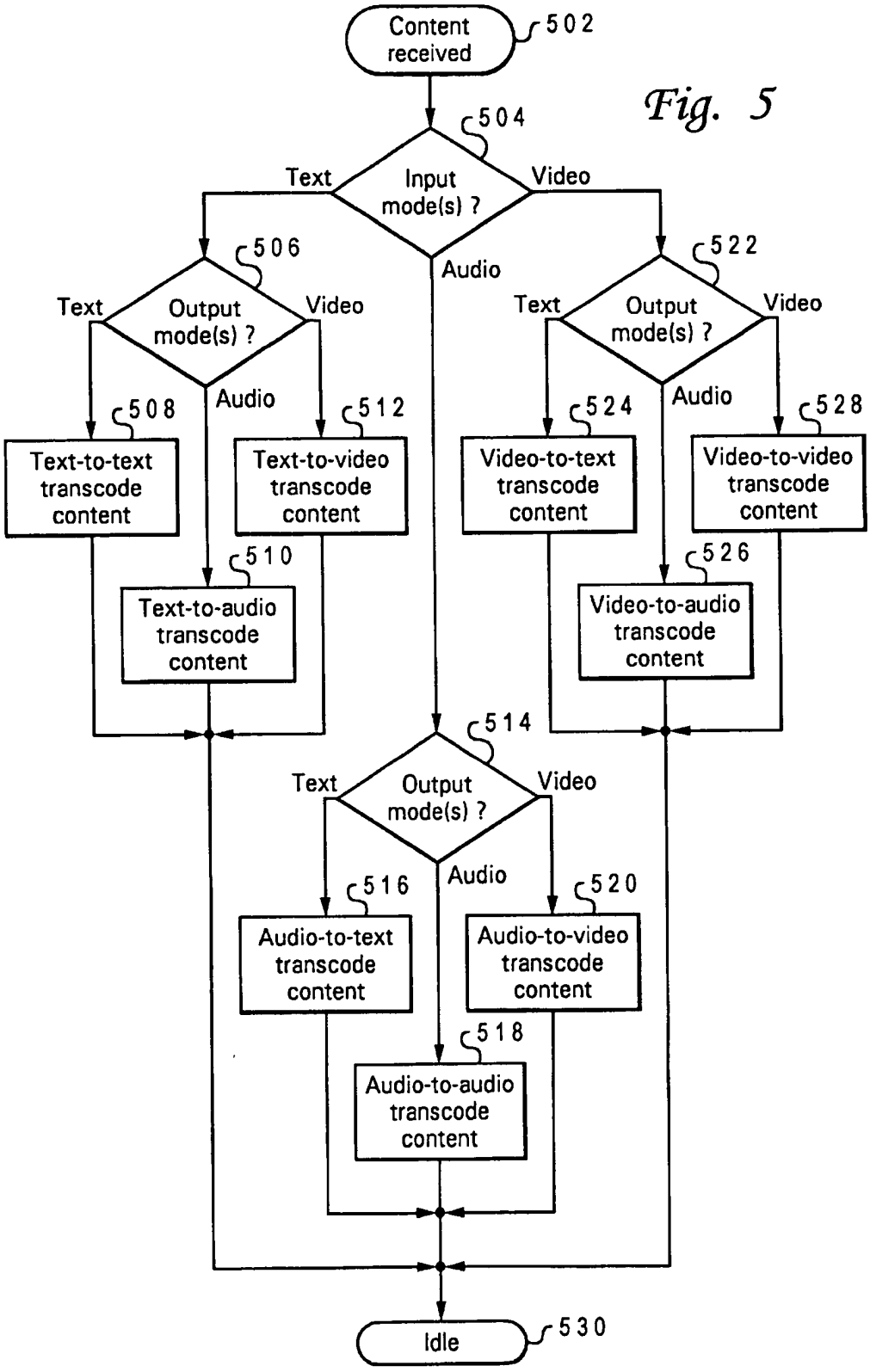

Content received
502
Input mode(s) ?
504
Text
Video
Audio
Output mode(s) ?
506
Text
Video
Audio
Text-to-text transcode content
508
Text-to-video transcode content
512
Text-to-audio transcode content
510
Output mode(s) ?
522
Text
Video
Audio
Video-to-text transcode content
524
Video-to-video transcode content
528
Video-to-audio transcode content
526
Output mode(s) ?
514
Text
Video
Audio
Audio-to-text transcode content
516
Audio-to-video transcode content
520
Audio-to-audio transcode content
518
Idle
530

Fig. 5

DYNAMIC DESTINATION-DETERMINED MULTIMEDIA AVATARS FOR INTERACTIVE ON-LINE COMMUNICATIONS

BACKGROUND OF THE INVENTION

1. Technical Field

The present invention generally relates to interactive communications between users and in particular to altering identifying attributes of a participant during interactive communications. Still more particularly, the present invention relates to altering identifying audio and/or video attributes of a participant during interactive communications, whether textual, audio or motion video.

2. Description of the Related Art

Individuals use aliases or "screen names" in chat rooms and instant messaging rather than their real name for a variety of reasons, not the least of which is security. An avatar, an identity assumed by a person, may also be used in chat rooms or instant messaging applications. While an alias typically has little depth and is usually limited to a name, an avatar may include many other attributes such as physical description (including gender), interests, hobbies, etc. for which the user provides inaccurate information in order to create an alternate identity.

As available communications bandwidth and processing power increases while compression/transmission techniques simultaneously improve, the text-based communications employed in chat rooms and instant messaging is likely to be enhanced and possibly replaced by voice or auditory communications or by video communications. Audio and video communications over the Internet are already being employed to some extent for chat rooms, particularly those providing adult-oriented content, and for Internet telephony. "Web" motion video cameras and video cards are becoming cheaper, as are audio cards with microphones, so the movement to audio and video communications over the Internet is likely to expand rapidly.

For technical, security, and aesthetic reasons, a need exists to allow users control over the attributes of audio and/or video communications. It would also be desirable to allow user control over identifying attributes of audio and video communications to create avatars substituting for the user.

SUMMARY OF THE INVENTION

It is therefore one object of the present invention to improve interactive communications between users.

It is another object of the present invention to alter identifying attributes of a participant during interactive communications.

It is yet another object of the present invention to alter identifying audio and/or video attributes of a participant during interactive communications, whether textual, audio or motion video.

The foregoing objects are achieved as is now described. Transforms are used for transcoding input text, audio and/or video input to provide a choice of text, audio and/or video output. Transcoding may be performed at a system operated by the communications originator, an intermediate transfer point in the communications path, and/or at one or more system(s) operated by the recipient(s). Transcoding of the communications input, particular voice and image portions, may be employed to alter identifying characteristics to create an avatar for a user originating the communications input.

The above as well as additional objectives, features, and advantages of the present invention will become apparent in the following detailed written description.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself however, as well as a preferred mode of use, further objects and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:

FIG. **1** depicts a data processing system network in which a preferred embodiment of the present invention may be implemented;

FIGS. **2A–2C** are block diagrams of a system for providing communications avatars in accordance with a preferred embodiment of the present invention;

FIG. **3** depicts a block diagram of communications transcoding among multiple clients in accordance with a preferred embodiment of the present invention;

FIG. **4** is a block diagram of serial and parallel communications transcoding in accordance with a preferred embodiment of the present invention; and

FIG. **5** depicts a high level flow chart for a process of transcoding communications content to create avatars in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference now to the figures, and in particular with reference to FIG. **1**, a data processing system network in which a preferred embodiment of the present invention may be implemented is depicted. Data processing system network **100** includes at least two client systems **102** and **104** and a communications server **106** communicating via the Internet **108** in accordance with the known art. Accordingly, clients **102** and **104** and server **106** communicate utilizing HyperText Transfer Protocol (HTTP) data transactions and may exchange HyperText Markup Language (HTML) documents, Java applications or applets, and the like.

Communications server **106** provides "direct" communications between clients **102** and **104**—that is, the content received from one client is transmitted directly to the other client without "publishing" the content or requiring the receiving client to request the content. Communications server **106** may host a chat facility or an instant messaging facility or may simply be an electronic mail server. Content may be simultaneously multicast to a significant number of clients by communications server **106**, as in the case of a chat room. Communications server **106** enables clients **102** and **104** to communicate, either interactively in real time or serially over a period of time, through the medium of text, audio, video or any combination of the three forms.

Referring to FIGS. **2A** through **2C**, block diagrams of a system for providing communications avatars in accordance with a preferred embodiment of the present invention are illustrated. The exemplary embodiment, which relates to a chat room implementation, is provided for the purposes of explaining the invention and is not intended to imply any limitation. System **200** as illustrated in FIG. **2A** includes browsers with chat clients **202** and **204** executing within clients **102** and **104**, respectively, and a chat server **206** executing within communications server **106**. Communications input received from chat clients **202** and **204** by chat server **206** is multicast by chat server **206** to all participating users, including clients **202** and **204** and other users.

In the present invention, system **200** includes transcoders **208** for converting communications input into a desired

communications output format. Transcoders **208** alter properties of the communications input received from one of clients **202** and **204** to match the originator's specifications **210** and also to match the receiver's specifications **212**. Because communications capabilities may vary (i.e., communications access bandwidth may effectively preclude receipt of audio or video), transcoders provide a full range of conversions as illustrated in Table I:

TABLE I

	Receives Audio	Receives Text	Receives Video
Origin Audio	Audio-to-Audio	Audio-to-Text	Audio-to-Video
Origin Text	Text-to-Audio	Text-to-Text	Text-to-Video
Origin Video	Video-to-Audio	Video-to-Text	Video-to-Video

Through audio-to-audio (speech-to-speech) transcoding, the speech originator is provided with control over the basic presentation of their speech content to a receiver, although the receiver may retain the capability to adjust speed, volume and tonal controls in keeping with basic sound system manipulations (e.g. bass, treble, midrange). Intelligent speech-to-speech transforms alter identifying speech characteristics and patterns to provide an avatar (alternative identity) to the speaker. Natural speech recognition is utilized for input, which is contextually mapped to output. As available processing power increases and natural speech recognition techniques improve, other controls may be provided such as contextual mapping of speech input to a different speech characteristics—such as adding, removing or changing an accent (e.g., changing a Southern U.S. accent to a British accent), changing a child's voice to an adult's or vice versa, and changing a male voice to a female voice or vice versa—or to a different speech pattern (e.g., changing a New Yorker's speech pattern to a Londoner's speech pattern).

For audio-to-text transcoding the originator controls the manner in which their speech is interpreted by a dictation program, including, for example, recognition of tonal changes or emphasis on a word or phrase which is then placed in boldface, italics or underlined in the transcribed text, and substantial increases in volume resulting in the text being transcribed in all capital characters. Additionally, intelligent speech to text transforms would transcode statements or commands to text shorthand, subtext or "emoticon". Subtext generally involves delimited words conveying an action (e.g., "<grin>") within typed text. Emoticons utilize various combinations of characters to convey emotions or corresponding facial expressions or actions. Examples include: :) or :-) or :-D or d;^) for smiles,:(for a frown, ;-) or; -D for a wink; -P for a "raspberry" (sticking out tongue), and :-|, :-> or :-x for miscellaneous expressions; With speech-to-text transcoding in the present invention, if the originator desired to present a smile to the receiver, the user might state "big smile", which the transcoder would recognize as an emoticon command and generate the text ":-D". Similarly, a user stating "frown" would result in the text string ":-(" within the transcribed text.

For text-to-audio transcoding, the user is provided with control over the initial presentation of speech to the receiver. Text-to-audio transcoding is essentially the reverse of audio-to-text transcoding in that text entered in all capital letters would be converted to increased volume on the receiving end. Additionally, short hand chat symbols (emoticons) would convert to appropriate sounds (e.g., ":-P" would convert to a raspberry sound). Additionally, some aspects of speech-to-speech transcoding may be employed, to generate a particular accent or age/gender characteristics. The receiver may also retain rights to adjust speed, volume, and tonal controls in keeping with basic sound system manipulations (e.g. bass, treble, midrange).

Text-to-text transcoding may involve translation from one language to another. Translation of text between languages is currently possible, and may be applied to input text converted on the fly during transmission. Additionally, text-to-text conversion may be required as an intermediate step in audio-to-audio transcoding between languages, as described in further detail below.

Audio-to-video and text-to-video transcoding may involve computer generated and controlled video images, such as anime (animated cartoon or caricature images) or even realistic depictions. Text or spoken commands (e.g., "<grin>" or "<wink>") would cause generated images to perform the corresponding action.

For video-to-audio and video-to-text transcoding, origin video typically includes audio (for example, within the well-known layer 3 of the Motion Pictures Expert Group specification, more commonly referred to as "MP3"). For video-to-audio transcoding, simple extraction of the audio portion maybe performed, or the audio track may also be transcoded for utilizing the audio-to-audio transcoding techniques described above. For video-to-text transcoding, the audio track may be extracted and transcribed utilizing audio-to-text coding techniques described above.

Video-to-video transcoding may involve simple digital filtering (e.g., to change hair color) or more complicated conversions of video input to corresponding computer generated and controlled video images described above in connection with audio-to-video and text-to-video transcoding.

In the present invention, communication input and reception modes are viewed as independent. While the originator may transmit video (and embedded audio) communications input, the receiver may lack the ability to effectively receive either video or audio. Chat server **206** thus identifies the input and reception modes, and employs transcoders **208** as appropriate. Upon "entry" (logon) to a chat room, participants such as clients **202** and **204** designate both the input and reception modes for their participation, which may be identical or different (i.e., both send and receive video, or send text and receive video). Server **206** determines which transcoding techniques described above are required for all input modes and all reception modes. When input is received, server **206** invokes the appropriate transcoders **208** and multicasts the transcoded content to the appropriate receivers.

With reference now to FIG. **3**, a block diagram of communications transcoding among multiple clients in accordance with a preferred embodiment of the present invention is depicted. Chat server **206** utilizes transcoders **208** to transform communications input as necessary for multicasting to all participants. In the example depicted, four clients **302**, **304**, **306** and **308** are currently participating in the active chat session. Client A **302** specifies text-based input to chat server **206**, and desires to receive content in text form. Client B **304** specifies audio input to chat server **206**, and desires to receive content in both text and audio forms. Client C **306** specifies text-based input to chat server **206**, and desires to receive content in video mode. Client D **308** specifies video input to chat server **206**, and desires to receive content in both text and video modes.

Under the circumstances described, chat server **206**, upon receiving text input from client A **302**, must perform text-

to-audio and text-to-video transcoding on the received input, then multicast the transcoded text form of the input content to client A **302**, client B **304**, and client D **308**, transmit the transcoded audio mode content to client B **308**, and multicast the transcoded video mode content to client C **306** and client D **308**. Similarly, upon receiving video mode input from client D **308**, server **206** must initiate at least video-to-text and video-to-audio transcoding, and perhaps video-to-video transcoding, then multicast the transcoded text mode content to client A **302**, client B **304**, and client D **308**, transmit the transcoded audio mode content to client B **308**, and multicast the (transcoded) video mode content to client C **306** and client D **308**.

Referring back to FIG. **2**A, transcoders **206** may be employed serially or in parallel on input content. FIG. **4** depicts serial transcoding of audio mode input to obtain video mode content, using audio-to-text transcoder **208***a* to obtain intermediate text mode content and text-to-video transcoder **208**b to obtain video mode content. FIG. **4** also depicts parallel transcoding of the audio input utilizing audio-to-audio transcoder **208***c* to alter identifying characteristics of the audio content. The transcoded audio is recombined with the computer-generated video to achieve the desired output.

By specifying the manner in which input is to be transcoded for all three output forms (text, audio and video), a user participating in a chat session on chat server **206** may create avatars for their audio and video representations. It should be noted, however, that the processing requirements for generating these avatars through transcoding as described above could overload a server. Accordingly, as shown in FIG. **2**B and **2**C, some or all of the transcoding required to maintain an avatar for the user may be transferred to the client systems **102** and **104** through the use of client-based transcoders **214**. Transcoders **214** may be capable of performing all of the A different types of transcoding described above prior to transmitting content to chat server **206** for multicasting as appropriate. The elimination of transcoders **208** at the server **106** may be appropriate where, for example, content is received and transmitted in all three modes (text, audio and video) to all participants, which selectively utilize one or more modes of the content. Retention of server transcoders **208** may be appropriate, however, where different participants have different capabilities (i.e., one or more participants can not receive video transmitted without corresponding transcoded text by another participant).

With reference now to FIG. **5**, a high level flow chart for a process of transcoding communications content to create avatars in accordance with a preferred embodiment of the present invention is depicted. The process begins at step **502**, which depicts content being received for transmission to one or more intended recipients. The process passes first to step **504**, which illustrates determining the input mode(s) (text, speech or video) of the received content.

If the content was received in at least text-based form, the process proceeds to step **506**, which depicts a determination of the desired output mode(s) in which the content is to be transmitted to the recipient. If the content is to be transmitted in at least text form, the process then proceeds to step **508**, which illustrates text-to-text transcoding of the received content. If the content is to be transmitted in at least audio form, the process then proceeds to step **510**, which depicts text-to-audio transcoding of the received content. If Dent. the content is to be transmitted in at least video form, the process then proceeds to step **512**, which illustrates text-to-video transcoding of the received content.

Referring back to step **504**, if the received content is received in at least audio mode, the process proceeds to step **514**, which depicts a determination of the desired output mode(s) in which the content is to be transmitted to the recipient. If the content is to be transmitted in at least text form, the process then proceeds to step **516**, which illustrates audio-to-text transcoding of the received content. If the content is to be transmitted in at least audio form, the process then proceeds to step **518**, which depicts audio-to-audio transcoding of the received content. If the content is to be transmitted in at least video form, the process then proceeds to step **520**, which illustrates audio-to-video transcoding of the received content.

Referring again to step **504**, if the received content is received in at least video mode, the process proceeds to step **522**, which depicts a determination of the desired output mode(s) in which the content is to be transmitted to the recipient. If the content is to be transmitted in at least text form, the process then proceeds to step **524**, which illustrates video-to-text transcoding of the received content. If the content is to be transmitted in at least audio form, the process then proceeds to step **526**, which depicts video-to-audio transcoding of the received content. If the content is to be transmitted in at least video form, the process then proceeds to step **528**, which illustrates video-to-video transcoding of the received content.

From any of steps **508**, **510**, **512**, **516**, **518**, **520**, **524**, **526**, or **528**, the process passes to step **530**, which depicts the process becoming idle until content is once again received for transmission. The process may proceed down several of the paths depicted in parallel, as where content is received in both text and audio modes (as where dictated input has previously been transcribed) or is desired in both video and text mode (for display with the text as "subtitles"). Additionally, multiple passes through the process depicted may be employed during the course of transmission of the content to the final destination.

The present invention provides three points for controlling communications over the Internet: the sender, an intermediate server, and the receiver. At each point, transforms may modify the communications according to the transcoders available to each. Communications between the sender and receiver provide two sets of modifiers which may be applied to the communications content, and introduction of an intermediate server increases the number of combinations of transcoding which may be performed. Additionally, for senders and receivers that do not have any transcoding capability, the intermediate server provides the resources to modify and control the communications. Whether performed by the sender or the intermediate server, however, transcoding may be utilized to create an avatar for the sender.

It is important to note that while the present invention has been described in the context of a fully functional data processing system and/or network, those skilled in the art will appreciate that the mechanism of the present invention is capable of being distributed in the form of a computer usable medium of instructions in a variety of forms, and that the present invention applies equally regardless of the particular type of signal bearing medium used to actually carry out the distribution. Examples of computer usable mediums include: nonvolatile, hard-coded type mediums such as read only memories (ROMs) or erasable, electrically programmable read only memories (EEPROMs), recordable type mediums such as floppy disks, hard disk drives and CD-ROMs, and transmission type mediums such as digital and analog communication links.

While the invention has been particularly shown and described with reference to a preferred embodiment, it will be understood by those skilled in the art that various changes in form and detail may be made therein without departing from the spirit and scope of the invention.

What is claimed is:

1. A method for controlling communications, comprising:

receiving communications content and determining a text, audio, or video input mode of the content;

determining a user-specified text, audio, or video output mode for the content for delivering the content to a destination; and

transcoding the content from the text, audio, or video input mode to the user-specified text, audio, or video output mode prior to delivering the content to the destination utilizing a transcoder selected from the group consisting of a text-to-text transcoder, a text-to-audio transcoder, a text-to-video transcoder, an audio-to-text transcoder, an audio-to-audio transcoder, an audio-to-video transcoder, a video-to-text transcoder, a video-to-audio transcoder, and a video-to-video transcoder.

2. The method of claim 1, wherein the step of transcoding the content from the text, audio, or video input mode to the user-specified text, audio, or video output mode prior to delivering the content to the destination further comprises:

transcoding the content at a system at which the content is initially received.

3. The method of claim 1, wherein the step of transcoding the content from the text, audio, or video input mode to the user-specified text, audio, or video output mode prior to delivering the content to the destination further comprises:

transcoding the content at a system intermediate to a system at which the content is initially received and a system to which the content is delivered.

4. The method of claim 1, wherein the step of transcoding the content from the text, audio, or video input mode to the user-specified text, audio, or video output mode prior to delivering the content to the destination further comprises:

transcoding the content at a system to which the content is delivered.

5. The method of claim 1, wherein the step of transcoding the content from the text, audio, or video input mode to the user-specified text, audio, or video output mode prior to delivering the content to the destination further comprises:

creating an avatar for an originator of the content by altering identifying characteristics of the content.

6. The method of claim 5, wherein the step of creating an avatar for an originator of the content by altering identifying characteristics of the content further comprises:

altering speech characteristics of the originator.

7. The method of claim 5, wherein the step of creating an avatar for an originator of the content by altering identifying characteristics of the content further comprises:

altering pitch, tone, bass or mid-range of the content.

8. A system for controlling communications, comprising:

means for receiving communications content and determining a text, audio, or video input mode of the content;

means for determining a user-specified text, audio, or video output mode for the content for delivering the content to a destination; and

means for transcoding the content from the text, audio, or video input mode to the user-specified text, audio, or video output mode prior to delivering the content to the destination utilizing a transcoder selected from the group consisting of a text-to-text transcoder, a text-to-audio transcoder, a text-to-video transcoder, an audio-to-text transcoder, an audio-to-audio transcoder, an audio-to-video transcoder, a video-to-text transcoder, a video-to-audio transcoder, and a video-to-video transcoder.

9. The system of claim 8, wherein the means for transcoding the content from the text, audio, or video input mode to the user-specified text, audio, or video output mode prior to delivering the content to the destination further comprises:

means for transcoding the content at a system at which the content is initially received.

10. The system of claim 8, wherein the means for transcoding the content from the text, audio, or video input mode to the user-specified text, audio, or video output mode prior to delivering the content to the destination further comprises:

means for transcoding the content at a system intermediate to a system at which the content is initially received and a system to which the content is delivered.

11. The system of claim 8, wherein the means for transcoding the content from the text, audio, or video input mode to the user-specified text, audio, or video output mode prior to delivering the content to the destination further comprises:

means for transcoding the content at a system to which the content is delivered.

12. The system of claim 8, wherein the means for transcoding the content from the text, audio, or video input mode to the user-specified text, audio, or video output mode prior to delivering the content to the destination further comprises:

means for creating an avatar for an originator of the content by altering identifying characteristics of the content.

13. The system of claim 12, wherein the means for creating an avatar for an originator of the content by altering identifying characteristics of the content further comprises:

means for altering speech characteristics of the originator.

14. The system of claim 12, wherein the means for creating an avatar for an originator of the content by altering identifying characteristics of the content further comprises:

means for altering pitch, tone, bass or mid-range of the content.

15. A computer program product within a computer usable medium for controlling communications, comprising:

instructions for receiving communications content and deter a text, audio, or video input mode of the content;

instructions for determining a user-specified text, audio, or video output mode for the content for delivering the content to a destination; and

instructions for transcoding the content from the text, audio, or video input mode to the user-specified text, audio, or video output mode prior to delivering the content to the destination utilizing a transcoder selected from the group consisting of a text-to-text transcoder, a text-to-audio transcoder, a text-to-video transcoder, an audio-to-text transcoder, an audio-to-audio transcoder, and audio-to-video transcoder, a video-to-text transcoder, a video-to-audio transcoder, and a video-to-video transcoder.

16. The computer program product of claim 15, wherein the instructions for transcoding the content from the text, audio, or video input mode to the user-specified text, audio,

or video output mode prior to delivering the content to the destination further comprises: instructions for transcoding the content at a system at which the content is initially received.

17. The computer program product of claim **15**, wherein the instructions for transcoding the content from the text, audio, or video input mode to the user-specified text, audio, or video output mode prior to delivering the content to the destination further comprises:

instructions for transcoding the content at a system intermediate to a system at which the content is initially received and a system to which the content is delivered.

18. The computer program product of claim **15**, wherein the instructions for transcoding the content from the text, audio, or video input mode to the user-specified text, audio, or video output mode prior to delivering the content to the destination further comprises:

instructions for transcoding the content at a system to which the content is delivered.

19. The computer program product of claim **15**, wherein the instructions for transcoding the content from the text, audio, or video input mode to the user-specified text, audio, or video output mode prior to delivering the content to the destination further comprises:

instructions for creating an avatar for an originator of the content by altering identifying characteristics of the content.

20. The computer program product of claim **19**, wherein the instructions for creating an avatar for an originator of the content by altering identifying characteristics of the content further comprises:

instructions for altering speech characteristics of the originator.

21. The computer program product of claim **19**, wherein the instructions for creating an avatar for an originator of the content by altering identifying characteristics of the content further comprises:

instructions for altering pitch, tone, bass or mid-range of the content.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

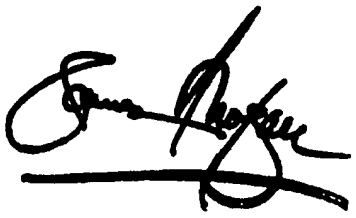
PATENT NO. : 6,453,294 B1
DATED : September 17, 2002
INVENTOR(S) : Dutta et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 5,
Line 64, please delete "Dent".

Signed and Sealed this

Eleventh Day of March, 2003



JAMES E. ROGAN
Director of the United States Patent and Trademark Office